

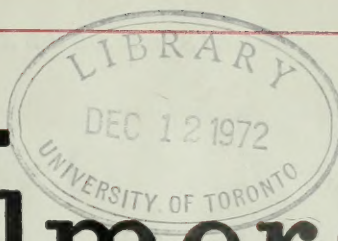
J
1175
A45
no. 1451B

GIN STORAGE
Engineering



Allis-Chalmers

Manufacturing Company

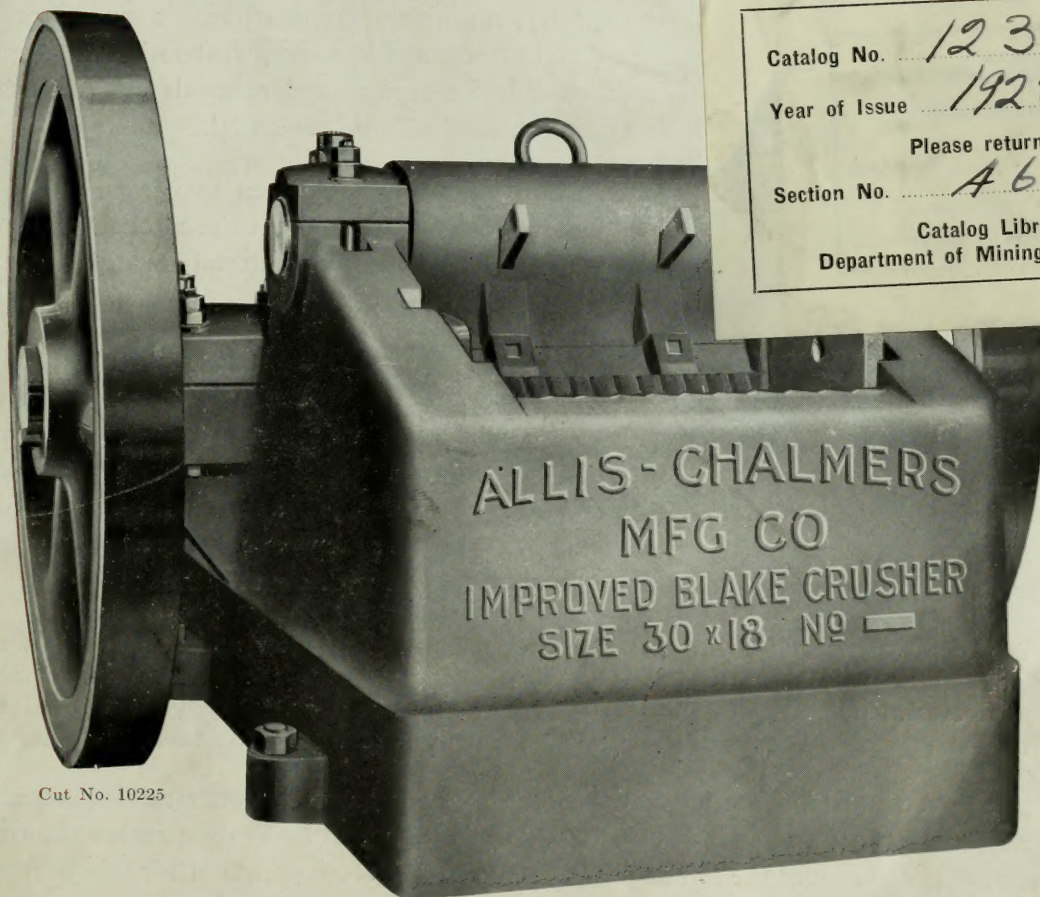


Bulletin No. 1451-B

Mining Machinery Department

January, 1922

JAW CRUSHERS



Cut No. 10225

Catalog No. 123
Year of Issue 1922
Please return to
Section No. 46-3
Catalog Library
Department of Mining Engineering

Fig. 1

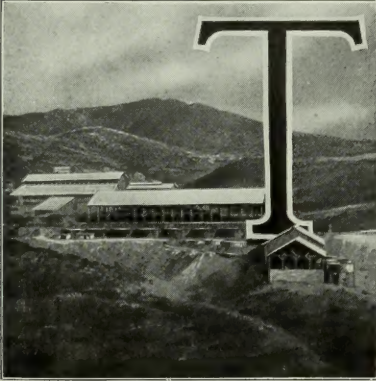
Copyright, 1913, 1917

MILWAUKEE, WIS., U. S. A.

By Allis-Chalmers Manufacturing Company

JAW CRUSHERS

BLAKE AND DODGE—STANDARD AND SECTIONAL



Cut No. 6627

THE initial crushing of ore for metallurgical treatment, or of rock for construction, purposes is accomplished by pressure applied between plane or concentric faces, the pieces breaking down along surfaces in which the resistance is least, or where the force applied is of greatest moment. Because of the enormous pressures that must be exerted to break the larger pieces or the several partly broken smaller pieces, and the rapid shocks incidental to large capacity, machinery for this purpose must be of a special class: strong and massive, wear-resisting, simple, easily accessible for repairs and renewals and requiring little attention. Reliability is essential.

In the crushers herein described, crushing takes place between two jaws set at an acute vertical angle, one fixed and one moving; the feed opening at the top being greater than the discharge opening at the bottom, gravity bringing the material into the crushing zone and discharging it when crushed.

The Blake Crusher consists of a heavy frame in which a swinging jaw suspended from the top is given a reciprocating motion by means of an eccentrically operated vertical pitman and a pair of toggle plates. These toggle plates are placed between the pitman and the jaw, and the pitman and the frame as shown in the sectional view, figure 4, and carry practically the entire crushing pressure between the jaw and the frame. Adjustment of opening at the discharge point is made by moving the wedge block, and by changing the toggle plates of which an assortment is furnished with each machine.

Owing to the movement being greatest at the point of the jaw and somewhat in the nature of a differential, this crusher has a very free discharge, making it especially desirable where the ores or rock are wet and contain clay or talc. Capacity is governed to a large extent by the opening at the point of the jaw, as will be seen from the table of capacities.

For a given crushing capacity, the Blake Crusher has a larger receiving opening than any other type, and as it is usually the largest piece to be broken, rather than the capacity, that determines the initial crusher, the Blake is often preferred for this purpose.

The jaw movement of the Blake crusher is small and its free discharge allows the fine pieces to run off rapidly, thus preventing the undue production of fines.

MINING MACHINERY DEPARTMENT

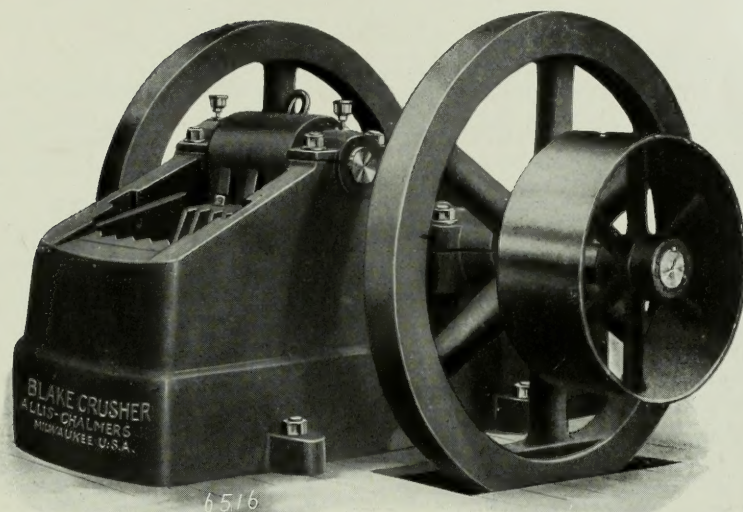


Fig. 2
Type "B" Blake Crusher

Cut No. 6516

Our type "B" Blake Crusher is the outcome of years of experience with older types, and is designed to meet the severest requirements of modern practice. The metal entering into its massive construction has been distributed properly to resist the enormous stresses set up in crushing the hardest materials.

As shown in the tables, it is built in sizes from 10" x 7" receiving opening, suitable for the

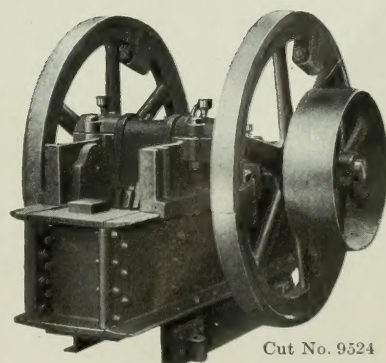
smaller mills and crushing plants, up to 30" x 18" receiving opening, suitable for some of the larger plants. We build larger sizes to suit specific requirements.

For the plant far from the railroad and having poor transportation facilities, we offer our Reliance type Sectional Blake Crusher as shown in figure 3. This crusher is built in the 10" x 7" size only; with side frames of heavy steel I-beams and many parts reduced in weight by the use of cast steel, it is easily sectionalized and transported over difficult trails and when properly erected it is very rigid and effective. All parts and shipping packages weigh less than 200 pounds, with the exception of the Swing Jaw (370 pounds) and the pitman, (265 pounds.)

CRUSHER DRIVES:

The standard drive for all sizes of Blake crushers consists of a single pulley keyed on to one end of the eccentric shaft; set close up to flywheel.

Our Special Drive consists of an extended shaft with an outboard bearing, the three sizes up to and including the 20" x 10" having tight and loose pulleys, and the larger sizes having a single pulley which may be driven from the countershaft by one of our Reliance Friction Clutch Pulley (figure 16), or direct from an individual motor. Extended shaft of other lengths than those shown will be furnished to suit special requirements.



Cut No. 9524

Fig. 3

JAW PLATES:

Standard Blake Crushers are equipped with chilled iron jaw plates and hard iron side plates unless otherwise specified. Where the character of the rock requires them, we furnish these parts of cast steel or of some of the special steels, as manganese and chrome.

PORTABLE CRUSHERS:

We are prepared to furnish our standard 10" x 7", 15" x 9", 20" x 10" and 24" x 12" Blake Crushers mounted on trucks as shown on page 14. These outfits are in demand for small portable plants used for road work.

TYPE "B" BLAKE CRUSHERS

SIZES, CAPACITIES, ETC.

No.	Size or Jaw Opening	Capacities in Tons per Hour								Approx. Horse- Power Required	Size of Pulley	R.P.M.	Weight Complete
		Size of Product											
		¾"	1"	1½"	2"	2½"	3"	4"	5"				
2	10"x 7"	1½	2½	4	5	.....	.....	.....	7	24"x 8½"	250 to 275	6500
3	15"x 9"	.....	6	8	10	12	.....	.....	10	24"x11"	250 to 275	12000
4	20"x10"	.....	.....	10	15	17½	20	.....	15	30"x13"	250 to 275	15000
5	24"x12"	.....	.....	.....	20	25	30	35	25	42"x15"	250 to 275	25000
6	30"x18"	.....	.....	.....	.....	30	37½	45	40	60"x15"	250 to 275	45000

NOTE—Capacities given are approximate and may vary either way according to the character of material to be broken, and depend on distance the jaws are set apart and the speed. Hard stone or ore that breaks with a snap will go through faster than sandstone.

FOR LARGER SIZES, SEE BULLETIN No. 1810

CLEARANCE DIMENSIONS

	10"x7"	15"x9"	20"x10"	24"x12"	30"x18"		10"x7"	15"x9"	20"x10"	24"x12"	30"x18"
A	1'- 0¼"	1'- 4"	1'- 7¼"	1'-10¼"	2'- 3½"	N	16"	1'- 8½"	1'-10"	2'- 1½"	2'-10½"
B	4"	5¼"	5¼"	5½"	6¼"	O	8"	8¼"	9¼"	10½"	11½"
C	3'- 8"	4'- 0"	4'- 9"	5'- 0"	5'- 8"	P	4"	4"	4"	4"	5"
D	8½"	11"	13"	15"	15"	Q	1'- 9"	2'- 1¼"	2'- 5¾"	2'-11"	3'- 6½"
E	24"	24"	30"	42"	60"	R	1'- 3½"	1'- 7¼"	1'-10½"	2'- 1½"	2'- 9½"
D _x	8½"	11"	13"	15"	15"	S	1'- 5"	1'- 8½"	1'-10"	2'- 1"	2'-10¼"
E _x	24"	24"	30"	42"	60"	T	1'- 1"	1'- 2"	1'- 2½"	1'- 3½"	1'- 4¾"
F	1'- 9½"	2'- 4½"	2'-10½"	3'- 4"	4'- 2"	U	10½"	11¼"	1'- 2"	1'- 2½"	1'-10½"
G	2'-11¼"	3'- 7¾"	4'- 3¾"	5'- 1"	6'- 3"	V	4'- 8"	5'- 5"	6'- 1"	6'-10½"	8'-11"
H	2'- 1"	2'- 6¾"	2'-11¾"	3'- 5½"	4'- 1"	W	1'- 4½"	1'- 7¾"	1'- 9½"	2'- 1"	2'- 7½"
H _x	3'-11½"	4'-10¾"	5'- 6¾"	5'- 4"	6'- 4"	X	2'- 4½"	2'-10¾"	3'- 5½"	3'-10½"	4'- 8"
J	4'- 2¼"	5'- 1½"	5'-11¾"	6'-11"	8'- 2"	Y	5'- 0½"	6'- 2¼"	7'- 1½"	6'- 7½"	7'- 6½"
J _x	7'- 2"	8'- 8"	10'- 0"	10'- 0"	11'- 7½"	Z	3'- 0½"	3'- 8"	4'- 1½"	3'- 2½"	3'- 5"
K	1'- 9¼"	2'- 2¼"	2'- 6"	2'-10"	3'- 9½"	a	5½"	6"	8"	8"	10"
K _x	9½"	11½"	13¾"	15"	18¼"	b	8¾"	9¼"	9¾"	10½"	11¾"
L	11½"	1'- 1½"	1'- 2½"	1'- 4½"	1'-10¼"	d	1"	1¼"	1½"	1¾"	2"
M	1'-11½"	2'- 1¼"	2'- 4½"	2'- 8"	3'- 3¼"	f	5/8"	¾"	¾"	7/8"	(4) ¾"

Dimensions given are preliminary and should be used only as a guide.

Cut No. 12478

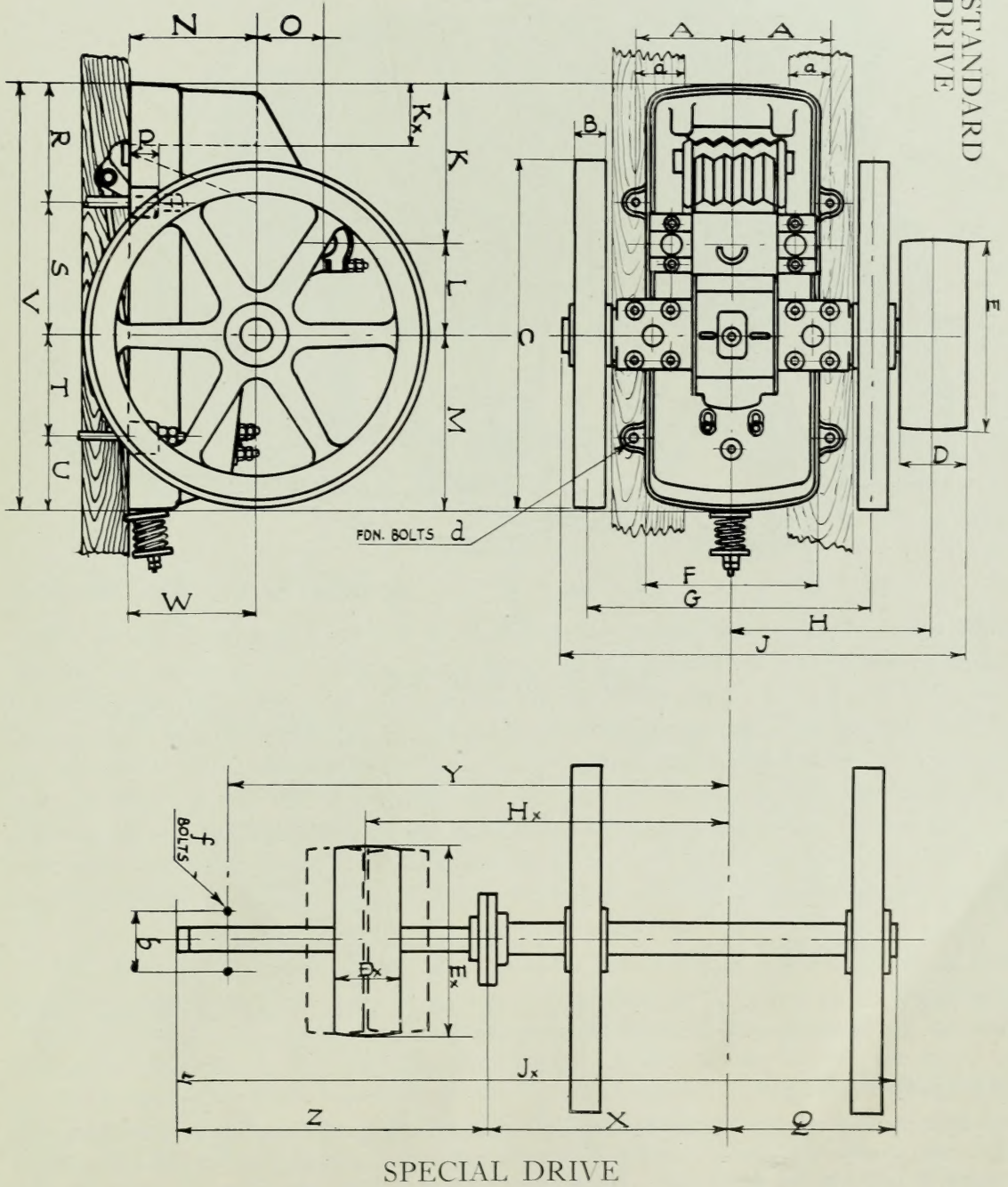


Fig. 5

Cut No. 12477

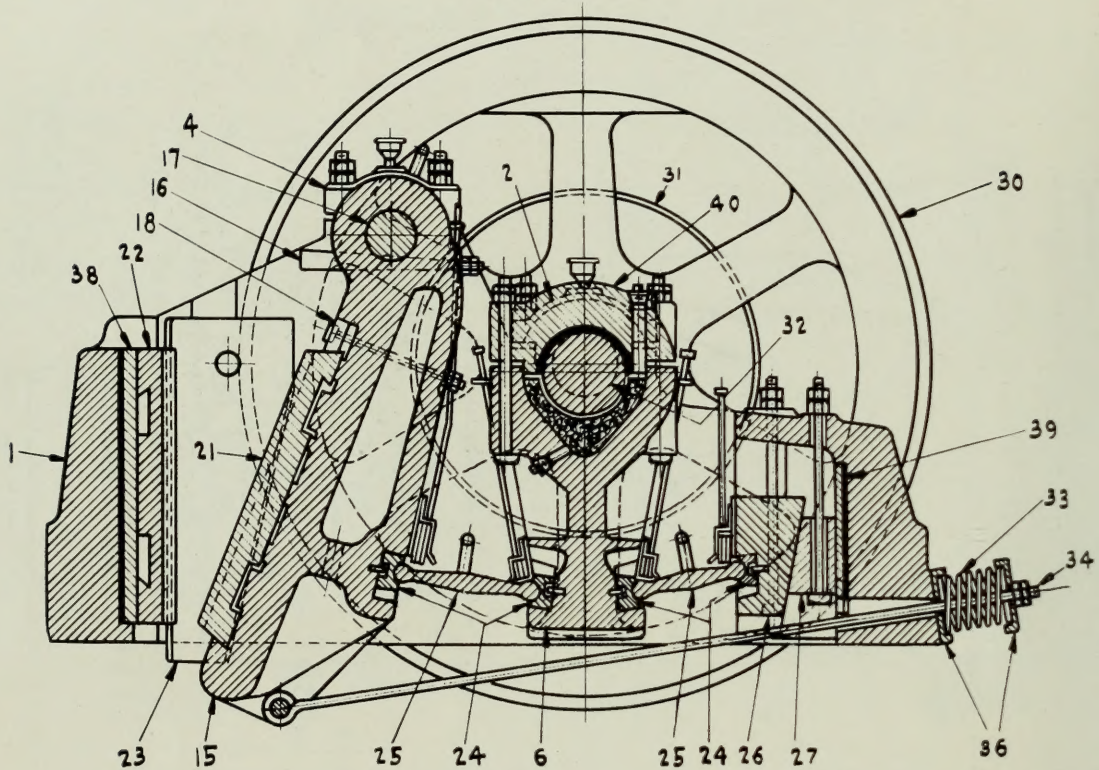


Fig. 4

LIST OF REPAIR PARTS

- | | |
|-------------------------|----------------------------------|
| 1—Frame | 25—Toggle Plate (specify length) |
| 2—Main Bearing Cap | 26—Toggle Block |
| 4—Swing Jaw Bearing Cap | 27—Wedge Block |
| 6—Pitman | 30—Fly Wheel |
| 15—Swing Jaw | 31—Pulley |
| 16—Swing Jaw Key | 32—Eccentric Shaft |
| 17—Swing Jaw Shaft | 33—Spring |
| 18—Swing Jaw Wedge | 34—Tension Rod |
| 21—Swing Jaw Plate | 36—Spring Washer |
| 22—Stationary Jaw Plate | 38—Front Thrust Plate |
| 23—Cheek Plate | 39—Back Thrust Plate |
| 24—Toggle Seat | 40—Pitman Cap |

NOTE:—The Pitman in the 10" x 7" and 15" x 9" Crushers, is made in one piece without Cap No. 40. Adjustment is obtained by means of a Gib and Key.

REPAIR PARTS:

In ordering repairs please furnish full particulars, giving size, type, number, shop number, numbers of repair parts as shown on repair list, and if possible the date and the name of the original purchaser. Repair parts for standard machines are kept in stock for prompt shipment.

Cut No. 4669

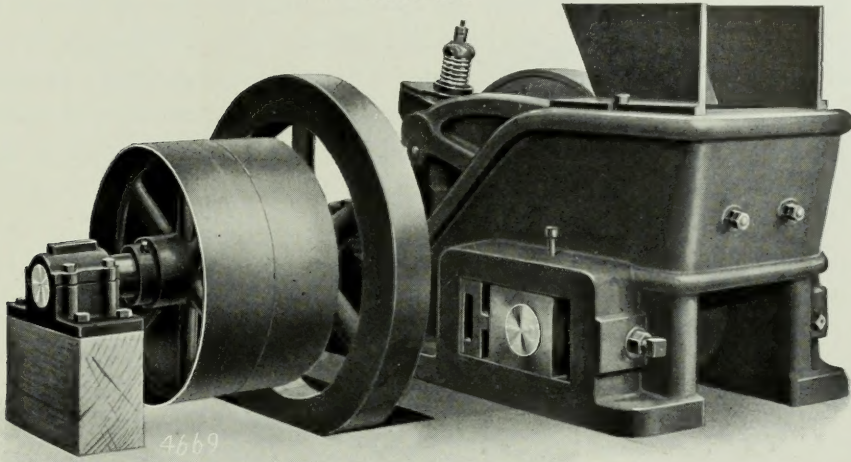


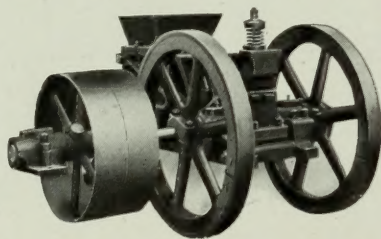
Fig. 6

THE DODGE CRUSHER:

The Dodge Crusher finds favor as the initial crusher in small plants, and as a secondary crusher. As shown in the sectional view (figure 9), it consists of a heavy frame carrying a movable jaw supported in bearings at the bottom. The jaw is one side of a triangular shaped lever, and receives its motion from an eccentrically operated vertical pitman, the jaw movement being practically nothing at the bottom where supported and increasing to a maximum at the top of the opening. Its capacity is governed by the opening at discharge point, but weight for weight the Dodge will handle and crush a larger piece of rock than any other crusher. It works well with dry ores and those free from talc and clay; it is simple and easily operated and is especially adapted to small producing mines.

The wearing faces of the jaws, the renewable jaw plates, are usually made of cast steel with plain faces; corrugated faces and plates of the special steels are furnished where required. The pitman-point of this crusher is chilled and held to place by an eye-bolt and spring as shown. The Allis-Chalmers Dodge Crusher is very strong, the metal in the frame and other parts being distributed to secure uniform strength throughout, and breaking plates are placed alongside the jaw bearings to relieve the machine from excessive overloads. These breaking plates should always be used.

With the assistance of some of our friends whose experience has been with the small plants in remote regions and far from the railroad, and by the use of cast steel instead of cast iron for many of its parts, we have developed a very satisfactory Sectional Dodge Crusher, with receiving opening 7 x 9 inches. This machine, as shown in figures 7 and 8, will be found at many mines all over the world giving a good account of itself. All pieces or shipping packages come within a 170 pound limit with the exception of the swing jaw (280 pounds) and two frame sections (250 pounds each).

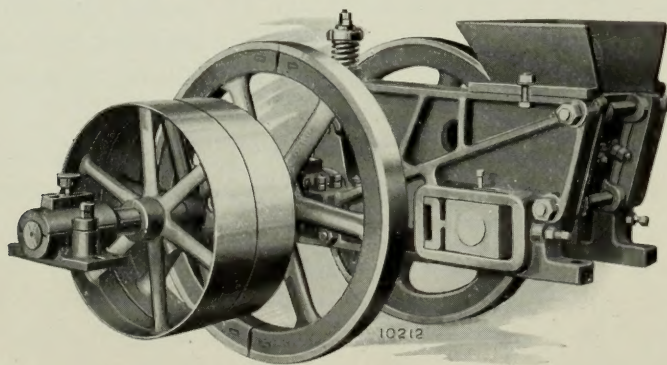


Cut No. 9528

Fig. 7

PRINCIPAL PARTICULARS OF ALLIS-CHALMERS DODGE CRUSHERS

Size or Jaw Opening	Tons Per Hour, Nut Size	Horse-Power Required	Size of Pulleys	Revolutions Per Minute	Weight Complete	Weight of Heaviest Piece
4" x 6"	1/2	3	16" x 4 1/2"	300	1100 lbs.	310 lbs.
7" x 9"	1 1/2 to 2 1/2	6	24" x 5 1/2"	300	3250 lbs.	1035 lbs.
7" x 9" Sectional	1 1/2 to 2 1/2	6	24" x 5 1/2"	300	3350 lbs.	280 lbs.
8" x 12"	3 to 5	10	30" x 6 1/2"	300	5900 lbs.	2000 lbs.
11" x 15"	6 to 8	15	32" x 13"	250	13500 lbs.	4015 lbs.



Cut No. 10212

Fig. 8

Technical drawing of a hand pump assembly, showing three views: top, side, and front. The drawing includes various dimensions labeled with letters and numbers.

Top View: Shows the pump head and handle. Dimensions include X (width of the head), $Y = \text{DIA. OF BOLT}$ (bolt diameter), and S (height of the handle).

Side View: Shows the pump handle and cylinder. Dimensions include J (total height), K (height of the handle), L (height of the cylinder), M (height of the pump body), N (height of the pump body), O (height of the pump body), P (height of the pump body), Q (height of the pump body), R (height of the pump body), and Z (height of the pump body).

Front View: Shows the pump body and wheel. Dimensions include A (width of the pump body), B (width of the pump body), C (width of the pump body), D (width of the pump body), E (width of the pump body), F (width of the pump body), G (width of the pump body), H (width of the pump body), I (width of the pump body), J (width of the pump body), K (width of the pump body), L (width of the pump body), M (width of the pump body), N (width of the pump body), O (width of the pump body), P (width of the pump body), Q (width of the pump body), R (width of the pump body), S (width of the pump body), T (width of the pump body), U (width of the pump body), V (width of the pump body), W (width of the pump body), X (width of the pump body), Y (width of the pump body), and Z (width of the pump body).

A **FLOOR LINE** is indicated on the left side of the front view.

Regular or Sectional	Size or Jaw Opening	A	B	C	D	E	F	G	H	I	J	K	L	M
Regular	4" x 6"	2'-8"	2'-5 $\frac{3}{4}$ "	11 $\frac{1}{2}$ "	16 $\frac{1}{2}$ "	2'-0 $\frac{1}{8}$ "	8 $\frac{3}{4}$ "	3 $\frac{1}{2}$ "	1 $\frac{1}{4}$ "	7"	15"	11 $\frac{1}{4}$ "	9"	9"
Regular	7" x 9"	3'-9"	3'-6 $\frac{1}{2}$ "	19 $\frac{1}{4}$ "	2'-2 $\frac{3}{4}$ "	3'-0 $\frac{1}{2}$ "	15 $\frac{5}{8}$ "	6 $\frac{1}{4}$ "	2 $\frac{1}{2}$ "	9"	20 $\frac{1}{2}$ "	16"	13"	13"
Regular	8" x 12"	5'-0"	4'-8"	23 $\frac{3}{8}$ "	2'-8 $\frac{5}{8}$ "	4'-0 $\frac{3}{8}$ "	17 $\frac{1}{4}$ "	6 $\frac{3}{4}$ "	2 $\frac{3}{4}$ "	10 $\frac{3}{4}$ "	2'-2 $\frac{3}{4}$ "	21 $\frac{1}{4}$ "	17 $\frac{1}{4}$ "	17 $\frac{1}{4}$ "
Regular	11" x 15"	5'-7 $\frac{3}{4}$ "	5'-2 $\frac{5}{8}$ "	2'-9 $\frac{3}{4}$ "	3'-0 $\frac{3}{4}$ "	4'-9 $\frac{1}{8}$ "	20 $\frac{1}{2}$ "	12 $\frac{1}{4}$ "	2 $\frac{3}{4}$ "	10"	3'-3"	3'-1"	2'-8"	2'-3"
Sectional	7" x 9"	3'-9"	3'-6 $\frac{1}{2}$ "	18 $\frac{1}{2}$ "	2'-1 $\frac{3}{4}$ "	3'-0 $\frac{1}{2}$ "	16"	5 $\frac{1}{2}$ "	2"	9"	20 $\frac{1}{2}$ "	16"	13"	13"
Regular or Sectional	Size or Jaw Opening	N	O	P	R	S	T	U	V	W	X	Y	Z	
Regular	4" x 6"	11 $\frac{1}{4}$ "	16 $\frac{1}{4}$ "	20"	27 $\frac{5}{8}$"	.....	.....	.....	.....	3 $\frac{4}{8}$"	.....	.....	2'-11"	.....
Regular	7" x 9"	17"	2'-5 $\frac{3}{4}$ "	3'-0"	3 $\frac{1}{2}$ "	3'-3 $\frac{1}{2}$ "	9 $\frac{1}{4}$ "	8"	.....	3 $\frac{4}{8}$ "	3"	2 $\frac{3}{8}$ "	5'-3"	...
Regular	8" x 12"	20"	2'-11"	3'-8"	4 $\frac{1}{8}$ "	3'-10 $\frac{5}{8}$ "	11"	10"	.....	7 $\frac{8}{8}$ "	3 $\frac{1}{2}$ "	2 $\frac{7}{8}$ "	6'-1"	.....
Regular	11" x 15"	2'-1 $\frac{3}{4}$ "	4'-1 $\frac{1}{4}$ "	4'-0"	5"	5'-8 $\frac{3}{8}$ "	14"	12"	6"	1 $\frac{1}{8}$ "	4 $\frac{3}{4}$ "	4'-7 $\frac{5}{8}$ "	8'-5"	.....
Sectional	7" x 9"	17"	2'-5 $\frac{3}{4}$ "	3'-0"	3"	3'-3 $\frac{1}{8}$ "	9 $\frac{1}{4}$ "	8"	.....	1"	3"	2- $\frac{3}{4}$ "	5'-3"	.....

No. 1451-B

ALLIS-CHALMERS DODGE CRUSHER

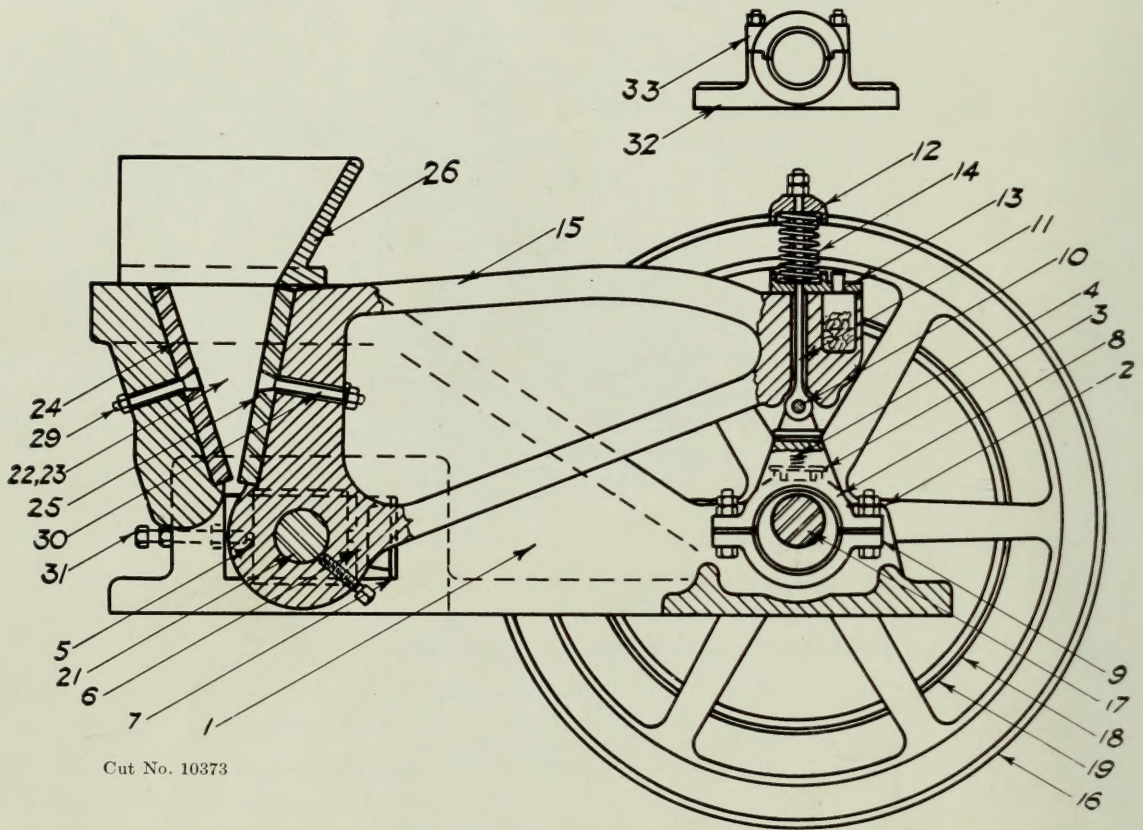


Fig. 9

REPAIR PARTS FOR DODGE CRUSHER

- | | | |
|-----------------------------|-------------------------------|-------------------------------|
| 1—Frame | 14—Swing Jaw Spring | Jaw Plate |
| 2—Main Bearing Cap | 15—Swing Jaw | 28—Corrugated Swing Jaw Plate |
| 3—Oil Well Cover | 16—Flywheel | 29—Stationary Jaw Plate Bolt |
| 4—Oil Well Cover Spring | 17—Eccentric Shaft | 30—Swing Jaw Plate Bolt |
| 5—Swing Jaw Shaft Box | 18—Loose Pulley | 31—Dog Bolt |
| 6—Breaking Plate | 19—Tight Pulley | 32—Outboard Bearing |
| 7—Shim | 21—Swing Jaw Shaft | 33—Outboard Bearing Cap |
| 8—Pitman | 22—Left Hand Side Liner | |
| 9—Pitman Cap | 23—Right Hand Side Liner | |
| 10—Pitman Pin | 24—Plain Stationary Jaw Plate | |
| 11—Pitman Eye Bolt | 25—Plain Swing Jaw Plate | |
| 12—Swing Jaw Spring Cap | 26—Hopper | |
| 13—Swing Jaw Oil Well Cover | 27—Corrugated Stationary | |

INSTRUCTIONS FOR ERECTING AND OPERATING
BLAKE CRUSHER
TYPE "B"

The part numbers given herein refer to figure No. 4 on page 6. The main frame No. 1 is usually shipped with bearing caps No. 2 and No. 4, wedge block No. 27, jaw plate No. 22, thrust plates No. 38 and No. 39 and side plates No. 23, in place.

The main frame No. 1 with the above parts should be set in place on foundation, bearing caps No. 2 and No. 4 removed, and bearings properly cleaned.

The swing jaw No. 15 with the jaw plate No. 21, wedge No. 18 and shaft No. 17 should then be lowered into the bearings and bearing caps No. 4 replaced.

The pitman No. 6 with the eccentric shaft No. 32 and pitman cap No. 40 should then be placed in position in the bearings and adjusted to obtain a good running fit on the eccentric. Replace the bearing caps No. 2 and key the flywheels No. 30 and pulley No. 31 in place on the shaft.

Each crusher is supplied with a full set of 5 toggles No. 25. Select the shortest of these, place it between the pitman and toggle block No. 26 and adjust wedge block No. 27 so that the pitman hangs in a vertical position. Then select a toggle of the proper length to hold the swing jaw in such position as will give the required jaw opening to produce the desired product and place same between the pitman and swing jaw.

Place the tension rod in position and adjust the tension spring and nut so that the swing jaw will retain its position and angle due to the toggle motion.

As the points of the jaw plates wear off, the swing jaw should be adjusted by means of the wedge block, but after the wedge block has reached its highest suitable position, further adjustment should be obtained by lowering the wedge block and putting in longer front toggles. Both the stationary and swing jaw plates are made reversible so that when they become worn they may be reversed and the above operation repeated.

While assembling the crusher all oil pipes and oil holes should be carefully cleaned, also all bearings including the toggle bearing. Before starting the crusher see that all wearing parts are lubricated and then start the crusher and allow same to run for a short period to bring all parts to a good bearing before starting to feed the material. Care must be taken to see that all wearing parts are sufficiently lubricated at all times and provision should be made, so far as possible, to prevent dust from getting into the bearings and moving parts.

CRUSHING PLANTS:

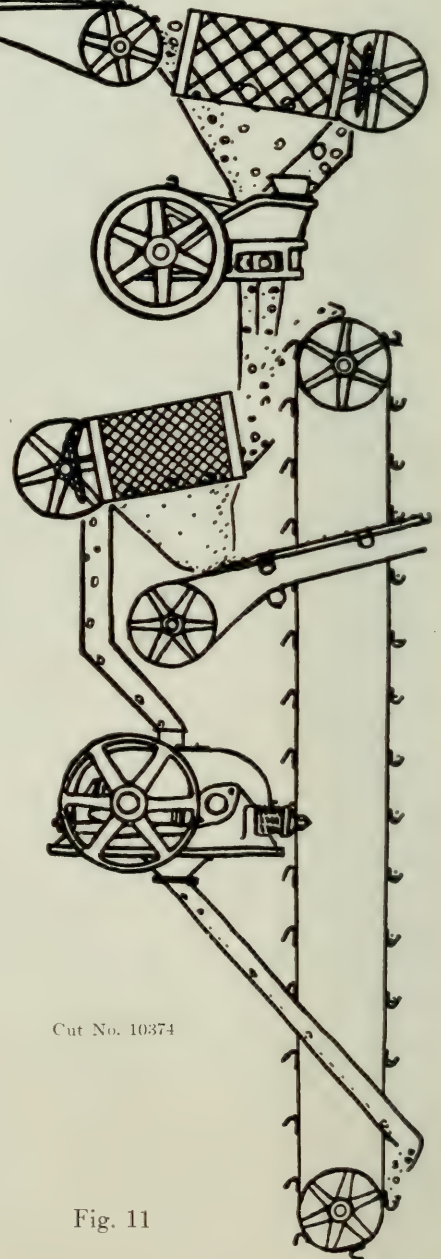
In many ore treatment plants, the coarse crushing unit is designed to operate but part of the time, usually for one shift, while the ore is being brought into the mill, during the day time, or at some other period that works to best

advantage. It is considered good practice to install the initial crusher larger than actually necessary, both to be able to receive larger pieces and to complete its work with the labor of the one shift.

A number of arrangements of crushing plants are possible, that shown diagrammatically in the illustration (figure 11) being of a type in which "graduated crushing" is practiced, the fines being removed by screening before each crushing operation.

Graduated crushing increases the capacity of the machine by relieving its feed of all pieces that are fine enough.

This "flow sheet" represents the passage of the rock or ore as follows:—Through the gate of the bin and over the grizzly, from which the oversize pieces go into the Blake crusher, the undersize joining with the crusher product; both are carried by the belt conveyor, which may be used as a sorting belt, to a revolving screen trommel in which a separation is made of the coarser pieces to be crushed in the Dodge secondary crusher, and the fine material the size of this crusher's product, both of which join and are fed into a second screen the fines from which are carried on a belt conveyor to the fine ore bins for further treatment; the oversize of this last screen is crushed in a set of rolls and returned by a bucket elevator to the screen for separation if necessary, or to the belt conveyor.



Cut No. 10374

Fig. 11

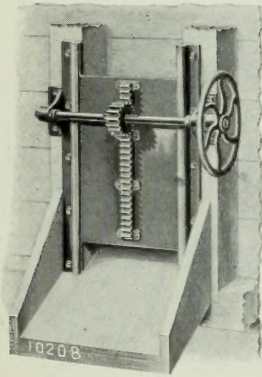


Fig. 12 Cut No. 10208

Grizzlies as shown in figure 14 are used for the coarsest screening just before the initial crusher. As the service is severe, we use taper bars $\frac{3}{8}$ " and $\frac{3}{4}$ "x3" in section, held together with rods and spaced with suitable cast iron washers. The popular sizes run from 3 x 8 feet to 4 x 10 feet with openings from half inch up to three inches.

Elevators for dry work are built both in the vertical and the inclined types, with heavy head shafts, and with suitable take-ups in the boot where the belt-tension is least. Rubber belts with malleable iron buckets give the best service. For ordinary purpose a wooden housing built by the purchaser in accordance with our plans is satisfactory, but for some conditions steel housings as built by us are desirable. We design our elevators to suit requirements, for both wet and dry work, obtaining a nice adjustment between speed, pulley sizes, capacity and character of material handled.

Conveyors offer marked advantages over any other system for transporting crushed material horizontally or on an incline. Rubber belts are mostly used, with flat or troughing idlers. The power required is very low. Short wide belts are frequently used for sorting ore, waste or ore being removed from the belt while the other goes on, or on flat belts the waste is pulled to one side and the ore pushed to the other, a divider at the discharge end making the separation into the proper bin.

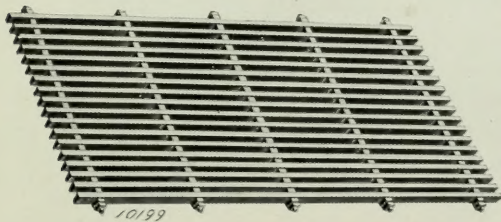


Fig. 14

Cut No. 10199

In the smallest plants, the product of the initial crusher goes directly to the mill bins, either by gravity, or carried by an elevator or conveyor; of the medium sized or large plants, it is the product from the secondary crusher (Blake, Dodge, or a set of rolls) that goes to the mill bins.

The accessory equipment of a crushing plant consist of:—ore bin gates, grizzlies, elevators, conveyors, screens, trolleys or cranes, transmission equipment, and frequently motor drives.

Figures 12 and 13 illustrate our Rack-and-Pinion and our Radial Lever or "Arc" Ore Bin Gates. The former is made with either single or double racks and is used where the movement of the gate is infrequent, while the latter is used where the gates must be operated frequently, the weight of the ore assisting in closing.

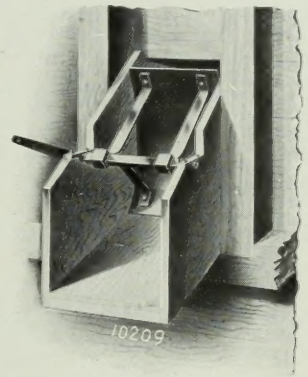


Fig. 13 Cut No. 10209

Two types of screens are used in coarse crushing plants, the cylindrical or the

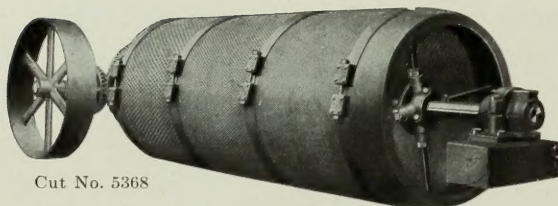


Fig. 15

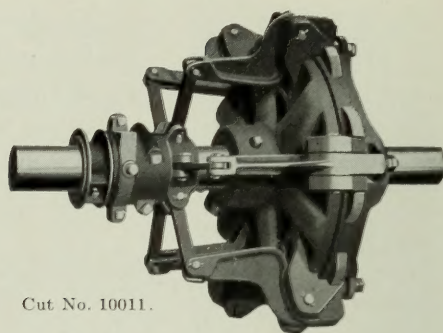


Fig. 16

conical revolving trommel screen as in figure 15 and the shaking screen into which the material is fed and progresses along the flat incline over the screening surface due to the reciprocating motion.

Our transmission equipment is used in many crushing and milling plants. Our line of bearings, pulleys, gearing, couplings and minor parts is complete, and our patented Reliance Friction Clutch (figure 16) is exceedingly popular with those operators who have them installed. We recommend for crushing plants of modern construction, the use of our adjustable hangers or pillow blocks equipped with our patented collar-oiling bearings.

PORTABLE BLAKE CRUSHER, TYPE "B"

Cut No. 11962

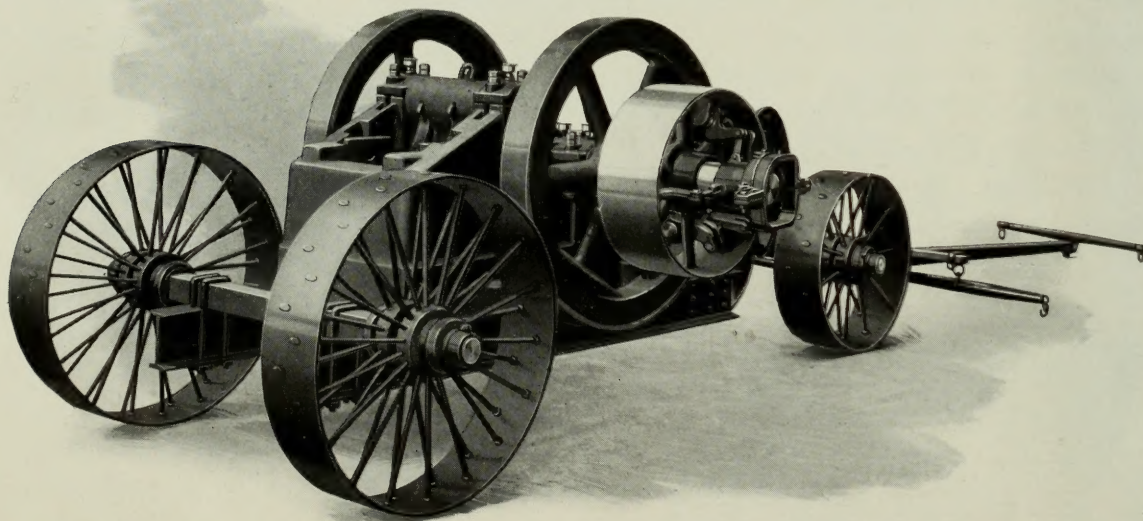


Fig. 17

No. 1451-B

Allis-Chalmers Manufacturing Company

PRINCIPAL PRODUCTS

AIR BRAKES

AIR COMPRESSORS

Steam Driven
Belt Driven
Electrically Driven, Portable
Electrically Driven, Stationary
Hydraulic Driven

CEMENT MACHINERY

Agitators
Air Slurry Pumps
Balls, forged steel
Ballpeb Mills
Compeb Mills
Concavex
Conveyors
Crushing Rolls
Dust Collectors
Elevators
Fairmount Crushers
Feeders
Gyratory Crushers
Jaw Crushers
Perforated Metals
Preliminators
Pulverized Coal Plants
Rotary Kilns and Auxiliary Equipment
Rotary Coolers
Rotary Dryers
Revolving Screens
Tube Mills
Wash Mills
Complete Cement Plants

CONDENSERS

Barometric
Jet
Surface

CRUSHING MACHINERY

Agricultural Plants
Bin Gates
Conical Screens
Conveyors
Crushing Rolls
Dust Collectors
Elevators
Fairmount Crushers
Feeders
Grizzlies
Gyratory Crushers
Hoists
Jaw Crushers
Perforated Metals
Portable Crushers
Pulverators
Revolving Screens
Shaking Screens
Stone and Sand Scrubbers
Stone and Sand Washers
Trolleys
Complete Fine Grinding Plants
Complete Crushing Plants

ENGINES

Corliss Engines
Gas Engines
Diesel Oil Engines
Blowing Engines
Rolling Mill Engines

FORGINGS

Alternating Current

Steam Turbo Generators
Water Wheel Type Generators
Engine Type Generators
Belted Type Generators
Frequency Changers
Synchronous Motor Generator Sets
Induction Motor Generator Sets
Synchronous Motors
Synchronous Condensers
Single Phase Induction Motors
Polyphase Induction Motors
Power Transformers
Distribution Transformers
Auto-Transformers
Motor Starters
Motor Driven Air Compressors
Switchboards

FLOUR MILL MACHINERY

Aspirators
Bolters, Universal
Bolting Cloth
Bolting Cloth Cleaners
Bran and Shorts, Dusters
Bran Packers
Conveyors, Spiral
Corn Mills
Fans
Feed Mills
Feed Screens
Flour Dressers
Flaking Machines
Flour Feeders and Mixers
Flour and Bran Packers
Granulators
Purifiers
Reels
Rolls
Roller Mills
Rolling Screens
Scalpers

HOISTING EQUIPMENT

Hoists, Electric
Hoists, Steam
Cages, Hoisting
Skips, Hoisting
Sheaves, Hoisting

HYDRAULIC MACHINERY

Francis Turbines
Impulse Wheels
Oil Pressure Governors
Pressure Regulators
Butterfly Valves
Accessories

MINING AND METALLURGICAL MACHINERY

Concentrating Plant Equipment
Copper Converting Plant Equipment
Cyanide Plant Equipment
Ore Washing Plant Equipment
Refining Plant Equipment
Roasting Plant Equipment
Sampling Plant Equipment
Smelting Plant Equipment
Stamp Mill Equipment
Breakers, McGregor Skull
Cars, Mould and Slag
Classifiers, Ore, Pulp and Sand
Converters, Copper
Crushers, Blake and Dodge Jaw
Elevators, Vertical Mill
Feeders, Ore and Rock
Furnaces, Copper and Lead Smelting
Furnaces, Roasting
Gates, Bin
Granulators, Ball and Pebble
Grinders, Ore and Sample
Grizzlies, Stationary and Moving
Jigs, Hancock and Hartz
Machines, Copper and Lead Casting
Machines, Flotation
Mills, Rod
Moulds, Bullion, Copper and Lead
Pots, Slag
Retorts, Gold and Silver
Rolls, Ore and Rock Crushing
Samplers, Ore and Tailings
Stamps, Gravity
Stamps, Tremain Steam
Trommels or Screens, (Revolving)
Vanners, Frue and Isbell
Washers, Log

ELECTRICAL APPARATUS

Direct Current

Steam Turbo Generators
Water Wheel Type Generators
Engine Type Generators
Belted Type Generators
Three Wire Generators
Railway Generators
Electrolytic Generators
Rotary Converters
Gasoline Engine Generator Sets
Constant Speed Motors
Adjustable Speed Motors
Balancer Sets
Motor Generator Sets
Motor Driven Air Compressors
Switchboards

PERFORATED METALS

POWDERED COAL PLANTS

POWER TRANSMISSION MACHINERY

Belt Tighteners
Boxes
Couplings
Gears
Hangers
Pulleys
Rope Sheaves
Shafting

PUMPING MACHINERY

Centrifugal Pumps
Fire Service Pumps
Geared Pumps
High Duty Reciprocating Pumping Engines
Motor Driven Plunger Pumps
Motor Driven Mine Pumps
Hydraulic Pressure Pumps
Oil Line Pumps
Screw Pumps

SAW MILL MACHINERY

Band Mills, Double Cutting
Band Mills, Single Cutting
Band Mills, Telescopic
Band Re-saws, Horizontal
Band Re-saws, Vertical
Board Lifters, Steam
Cant Flippers, Steam
Canting Machine, Overhead
Carriages
Circular Saw Mills
Conveying Machinery
Cutting Off Saws, Steam Feed
Edgers
Edging Grinders
Feeds, Steam, Direct Acting
Feeds, Steam, Twin Engine
Filing Room Tools
Lath Mills and Bolters
Live Rolls and Drives
Log Chains
Log Jacks
Log Loaders
Log Turners
Niggers, Steam
Set Works
Slashers
Steam Feed Valves
Stock Lifters, Steam
Transfers
Trimmers

TIMBER TREATING AND PRESERVING MACHINERY

TRACTORS

TURBINES—STEAM

TURBINES—WATER

Special Applications

Steel Mill Motors
Adjustable Speed Rolling Mill Drives
Blooming and Reversing Mill Drives
Hoist Motors
Illgner Flywheel Motor Generator Sets
Cement Mill Drives
Centrifugal Pump Motors
Reciprocating Plunger Pump Drives
Sectionalized Paper Mill Drives
Rubber Mill Drives
Flour Mill Drives
Fly Wheel Equalizing Sets
Machine Tool Drives
Ship Propulsion Drives
Air Brake Equipments

Allis-Chalmers Manufacturing Company

General Offices, . . . Milwaukee, Wis.

DISTRICT OFFICES

Atlanta, Ga., 1104-1106 Healey Bldg.	Los Angeles, Cal., 623-625 Title Insurance Bldg.
Baltimore, Md., 215 East Fayette St.	Milwaukee, Wis., West Allis Works.
Birmingham, Ala., 1010-1012 Brown-Marx Bldg.	Minneapolis, Minn., 707-711 Metropolitan Life Bldg.
Boston, Mass., 723-724 State Mutual Bldg.	New Orleans, La., 719-723 Maison Blanche Bldg.
Buffalo, N. Y., 574-576 Ellicott Square Bldg.	New York, N. Y., 50 Church Street.
Charlotte, N. C., 212 Chamber of Commerce Bldg.	Philadelphia, Pa., 806-810 Franklin Trust Bldg.
Chicago, Ill., 1321 Peoples Gas Bldg.	Pittsburgh, Pa., 1207-1210 Park Bldg.
Cincinnati, O., 1720 First National Bank Bldg.	Portland, Ore., 604-606 Lumbermen's Bldg.
Cleveland, O., 1119-1121 Schofield Bldg.	St. Louis, Mo., 2188-2189 Railway Exchange Bldg.
Dallas, Texas, 1101-1103 Patterson Ave.	Salt Lake City, Utah, 608-610 Kearns Bldg.
Denver, Colo., Symes Bldg.	San Francisco, Cal., 741-751 Rialto Bldg.
Detroit, Mich., 1828-1829 Ford Bldg.	Seattle, Wash., 115 Jackson Street.
Duluth, Minn., 709 Alworth Bldg.	Toledo, O., 819 Ohio Bldg.
Indianapolis, Ind., 305 Merchants Bank Bldg.	Wilkes-Barre, Pa., 904 Coal Exchange Bldg.
Kansas City, Mo., 1410-1412 Waldheim Bldg.	

FARM TRACTOR DISTRICT OFFICES

Allis-Chalmers Mfg. Co., 1101-1103 Patterson Ave., Dallas, Texas.
Allis-Chalmers Mfg. Co., 205-207 West 9th St., Des Moines, Iowa.

FOREIGN DISTRICT OFFICES

London, England, 728 Salisbury House, London Wall, E. C. 2
Paris, France, 3 Rue Taitbout.
Santiago, Chile, Calle Bandera 261, Casilla 2653.

CANADIAN REPRESENTATIVES

Canadian Allis-Chalmers, Limited:
Toronto, Ontario

FOREIGN SALES AGENCIES

Shanghai, China	American Trading Company, 25 Broad St., New York
Hankow, China	American Trading Company, 25 Broad St., New York
Pekin, China	American Trading Company, 25 Broad St., New York
Tientsin, China	American Trading Company, 25 Broad St., New York
Tokyo, Japan	American Trading Company, 25 Broad St., New York
Kobe, Japan	American Trading Company, 25 Broad St., New York
Yokohama, Japan	American Trading Company, 25 Broad St., New York
Sao Paulo, Brazil	Assumpcao & Cia
Turin, Italy	Mario Axerio
Johannesburg, South Africa	Edward L. Bateman
Mexico City, Mexico	H. W. Beers Electric Co., S. A.
Mexico City, Mexico	R. E. Briggs Co., S. A.
Madrid, Spain	Gumersindo Garcia
Lisbon, Portugal	Monteiro Gomes, Limitada, 15-17 East 40th St., New York
Honolulu, Hawaii	Honolulu Iron Works
Manila, P. I.	Honolulu Iron Works
Antofagasta, Chile	Suc. J. K. Robinson, 140 Front St., New York, N. Y.
Iquique, Chile	Suc. J. K. Robinson, 140 Front St., New York, N. Y.
Havana, Cuba	Thrall Electric Company

PRINTED IN U. S. A.